March 1, 1938. M. J. LEWIS 2,109,886

STEPLADDER

Filed May 16, 1936

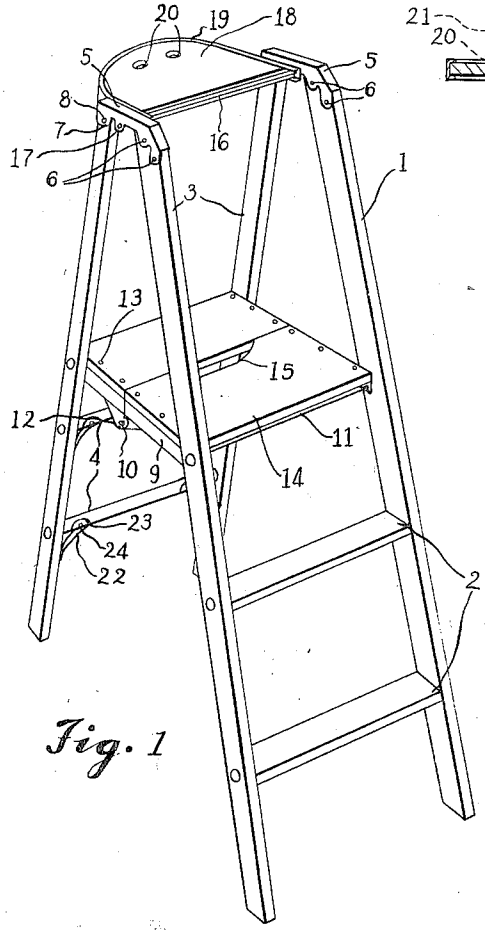


Fig. 1

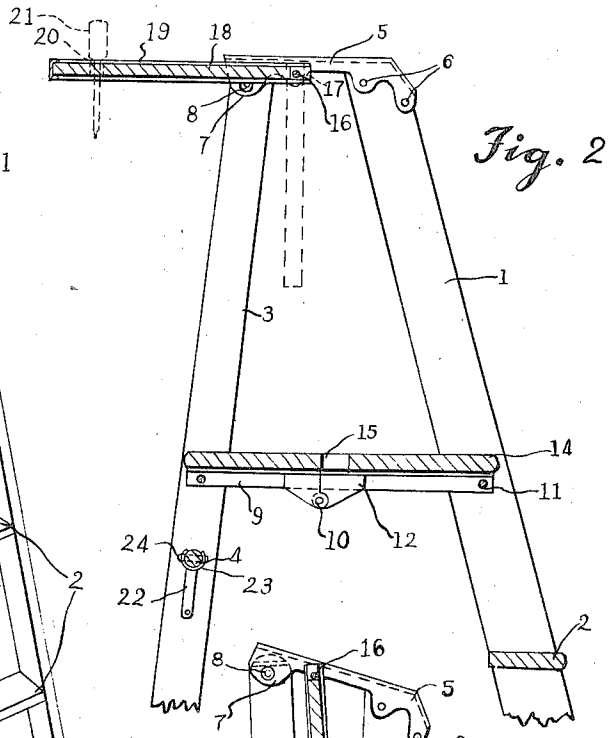


Fig. 2

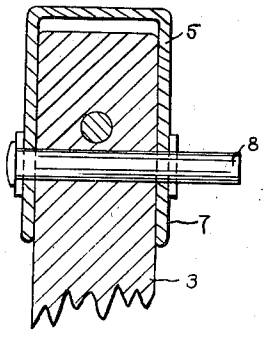


Fig. 4

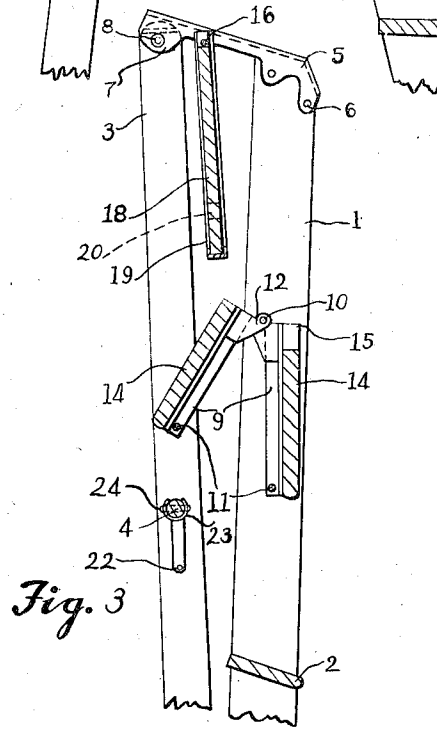


Fig. 3

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STEPLADDER

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4 Claims. (Cl. 228—17)

This invention relates to ladders and particularly to step ladders.

An object of the invention is to so mount a pair of platform members on articulated spreaders, connecting the front and back rails of a step ladder, that said members may adjoin edgewise in use of the ladder, to afford very ample standing room.

Another object is to so form one of said platform members that it may be readily grasped to elevate said members and the spreaders to effect collapse of the ladder.

A further object is to equip a step ladder, at its top, with a pivoted table member adapted in one position to project rearwardly from the ladder proper and form a convenient support for tools or utensils, and in another position to hang vertically from its pivot.

These and various other objects the invention attains by the construction hereinafter described, and illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of the improved ladder.

Fig. 2 is a vertical sectional view of the ladder expanded.

Fig. 3 is a similar view of the collapsed ladder.

Fig. 4 is a fragmentary vertical sectional view showing a pivotal connection between a rail of the back frame and a bracket at the top of the ladder.

In these views, the reference characters 1 and 2 designate the side rails and steps of the ladder proper, and 3 and 4 the side rails and rungs of the back frame. For hingedly connecting the back frame and ladder proper, a pair of brackets 5 are rigidly secured to the rails 1, at their upper ends, as by rivets 6, and project rearwardly from said rails, the back frame being hinged to their rear ends. Thus each bracket has its rear portion formed with a pair of spaced downwardly projecting lugs 7, the upper ends of the rails 3 being inserted between such lugs and pivoted thereto by aligned pins 8.

The ladder proper and rear frame are connected, at a suitable level by a pair of articulated spreaders 9, limiting divergency of said ladder and frame and thus determining their positions of use. Each spreader comprises front and rear angle bars having ends pivotally joined by a rivet 10, their other ends being pivoted on two rods 11 rigidly connecting the rails 1 and the other the rails 3. The rivets 10 interengage plates 12 welded or otherwise rigidly secured to the angle bars and projecting downwardly therefrom and toward each other to permit abutment of the connected bars, when aligned. Surmounting each pair of opposed angle irons 9 and attached rigidly thereto by rivets 13 or the like is a board or other platform member 14. When the step ladder is expanded for use, the members 14 occupy a complementary relation, such as to form a substantially square platform, affording much greater standing room than the usual steps, and hence affording a much safer support than such steps. The height thereof above the topmost step is preferably equal to the vertical spacing of the steps, so that it may be conveniently reached. The size of said platform is in fact adequate to accommodate two workmen, if desired, and the rungs of the back frame are sufficiently sturdy to permit their use as a ladder in mounting to said platform.

One of the members 14, and preferably the front one, is formed with an elongated hand hole 15 at its edge adjoining the other of said members, whereby the two members may be readily raised, to collapse the step ladder.

At a point between the upper ends of the rails 1 and 3, the brackets 5 are connected by a horizontal rod 16 transverse to said brackets, the latter being preferably each formed with a pair of spaced depending lugs 17 to receive said rod. Pivoted on said rod is a table member 18, the rod extending along one edge thereof. Preferably said member is of wood marginally engaged, except at said edge by a channel iron reinforcement 19 which projects terminally beyond said edge to pivotally engage the rod 16. As shown, the platform extends from said rod in an approximate semi-circle, the reinforcement 19 projecting slightly above the wooden member, so as to form a slight rim assisting to prevent dislodgment of any tools, implements or utensils from the table. The latter may further be formed with one or more openings 20, to permit screwdrivers or the like to be supported in an upright position, as indicated in dash line at 21. The pins 8 project toward each other sufficiently beyond the bracket 5 to engage beneath the reinforcement 19 when the table member is in horizontal position to maintain such position.

The back frame is preferably reinforced by metal braces 22 extending diagonally downward to the rails 3 from the rungs 4, or at least from the uppermost and lowermost rungs. Preferably the upper ends of such braces are each formed with a pair of lugs 23 upstanding at opposite sides of the engaged rung, and secured to the

latter by a rivet 24 passed diametrically through the rung.

The elongated form of the brackets 5, serves in addition to properly spacing the rails 1 and 3 at their upper ends to permit said brackets to afford ample supporting area to any board or scaffolding that may be rested thereon.

The described ladder possesses great strength and durability, and affords much greater safety than an ordinary step ladder. A person occupying the platform 14 derives considerably more lateral support from the rails 1 than is afforded when occupying any of the steps of an ordinary step ladder, and the table member 18, together with its pivot rod 16, provides a front support, materially aiding an occupant of the platform in preserving his balance. When the platform is occupied by two persons, the table member 18 will be vertically disposed between them.

The invention is presented as including all such modifications and changes as come within the scope of the following claims.

What I claim is:

1. A step ladder comprising a pair of rails, a plurality of steps carried by and between said rails, a pair of brackets rigidly mounted upon and rearwardly projecting from the upper ends of said rails, a rod jointly carried by the brackets, a table member pivotal about said rod from a substantially horizontal position of use to a substantially vertical position beneath the rod, a back frame and a hinge connection between the back frame and brackets, forming an additional support for the table member, in its horizontal position.

2. In a step ladder, a pair of rails, a plurality of vertically spaced steps carried by the rails, a pair of brackets rigidly carried by and rearwardly projecting from the upper ends of the rails, a back frame hinged jointly upon the brackets, an approximately U-shaped member, pivoted at its ends upon and between said brackets, its pivotal axis being disposed between the front and back frames, and means jointly carried by the brackets, rearwardly of its pivotal axis for freely supporting the U-shaped member in a substantially horizontal position, said member being movable about its pivot axis from its horizontal position to a substantially vertical position beneath the pivot axis, and a platform carried by the U-shaped member.

3. In a step ladder, the combination with a front frame and back frame, of a pair of brackets rigidly carried by one of the frames, at its top and projecting toward the other frame, a pair of aligned pins carried by said brackets, hinging the last-mentioned frame on said brackets and permanently spacing the two frames, and a table member pivoted on the brackets between the two frames and engageable in one pivotal position with said pins to be supported thereby and depending substantially below its pivot axis in another position.

4. A step ladder comprising a pair of rails, a plurality of steps carried by and between said rails, a pair of brackets rigidly mounted upon and rearwardly projecting from the upper ends of the rails, a table member pivoted upon and between said brackets and movable about its pivotal axis between positions in which it projects downwardly and rearwardly from such axis, a back frame, and a hinge connection between the back frame and said brackets, forming a support for the table member, in its rearwardly projecting position, supplementing the pivot means of the table member.

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